

Amendments to the Claims

Listing of claims:

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Q2
1. (Currently Amended) A composite of a vulcanizable ~~rubber or rubber-type~~ composition selected from a group consisting of natural rubbers, synthetic rubbers and thermoplastic elastomers and having at least one metal reinforcement element embedded therein, wherein ~~said the~~ metal reinforcement ~~elements have~~ element has a coating of a polymer deposited from a solution and ~~are~~ compatible with and co-polymerizable with said vulcanizable ~~rubber~~ composition, and bearing functional groups covalently bonding to the metal surface of said reinforcement element, wherein the functional groups are selected from the group consisting of:

thiol groups, mercapto groups, silanes, amines,
-SH; -SiHCl₂; -SiH₂Cl; -Si(Cl)₃; -SiHBr₂; -SiH₂Br; -SiBr₃; -Si(R'(Cl)₂);
-Si(OR')₃; -Si(R'(OR')₂);
-PO₃H₂, -SO₂H,
acid anhydrides of -SH; -SiHCl₂; -SiH₂Cl; -Si(Cl)₃; -SiHBr₂; -SiH₂Br; -SiBr₃; -
Si(R'(Cl)₂); -Si(OR')₃; -Si(R'(OR')₂);
-PO₃H₂, -SO₂H,
acid chloride groups of -SH; -SiHCl₂; -SiH₂Cl; -Si(Cl)₃; -SiHBr₂; -SiH₂Br; -
SiBr₃; -Si(R'(Cl)₂); -Si(OR')₃; -Si(R'(OR')₂);
-PO₃H₂, -SO₂H,
organometallic groups of the formula -M(OR')_n, whereby M is a metal selected
from the group consisting of Al, Sn, B, Ti and V; and n is the ligand number
corresponding to the metal M; and
a phthalocyanin, phthalonitril groups, a monothiol, or monothiolate groups;
and R' is an alkyl selected from the group consisting of methyl, ethyl or propyl.

2. (Original) A composite according to claim 1, wherein said solution is an aqueous solution.

3. (Original) A composite according to claim 1, wherein said solution is an alcoholic solution.

4. (Original) A composite according to claim 1, wherein said solution is an organic solution.

5. (Original) A composite according to claim 1, wherein said metal reinforcement elements have a coating of a non-cured rubber composition.

6. (Canceled)

7. (Canceled)

8. (Canceled)

9. (Currently Amended) A composite according to claim 1, wherein said metal reinforcement elements comprise on top of said coating, a layer of a skim composition for the vulcanizable ~~rubber or rubber-like~~ composition.

10. (Currently Amended) A composite according to claim 1 wherein the vulcanizable ~~rubber~~ composition to be reinforced is a composition selected from the group consisting of a synthetic poly(isoprene), a natural poly(isoprene), a synthetic poly(butadiene), natural poly(butadiene), a styrene-butadiene-rubber (SBR), a halobutylrubber, ~~or~~ and an ethylene-propylene-diene-rubber (EPDM).

11. (Original) A composite according to claim 1, wherein said metal reinforcement element is an elongated steel element.

12. (Original) A composite according to claim 11, wherein said elongated steel element is coated with at least one metallic layer.

13. (Currently Amended) A composite according to claim 12, wherein said metallic layer is comprised of a metal selected from the group consisting of brass, bronze, zinc, zinc alloy, tin ~~or~~ and tin alloy.

14. (Currently Amended) A composite according to claim 13, wherein said zinc alloy is an alloy selected from the group consisting of a zinc-aluminium alloy, a zinc-aluminium-mischmetal alloy, a zinc-manganese alloy, a zinc-cobalt alloy, a zinc-nickel alloy, a zinc-iron alloy ~~or~~ and a zinc-tin alloy.

15. (Canceled)

16. (Canceled)

17. (Canceled)

18. (Currently Amended) A composite according to claim ~~17~~ 1, wherein said functional groups are carried along a polymer backbone.

19. (Currently Amended) A composite according to claim ~~17~~ 1, wherein said functional groups are part of side chains of the polymer.

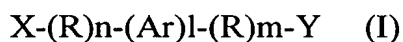
20. (Original) A composite according to claim 18, wherein said functional groups are epoxy groups carried along the polymer backbone.

21. (Original) A composite according to claim 18, wherein said functional groups are epoxy groups which are part of side chains attached to the polymer backbone.

22. (Currently Amended) A composite according to claim ~~16~~ 1, wherein said organometallic groups are of the formula $-M(Cl)_n$, where n is the ligand number corresponding to the metal M.

23. (Canceled)

24. (Currently Amended) A composite according to claim 1, wherein said polymer is bound to said metal surface by an adhesion promoter that is a bifunctional compound of the general formula (I)



with \ast X representing a group capable of reacting covalently at the metal surface,

R representing an organic spacer chain,

Ar representing an aromatic system,

Y representing a group capable of forming covalent bonds to the functional groups of said coating, and $0 \leq n, m \leq 16$; and $0 \leq l \leq 6$.

25. (Currently Amended) A composite according to claim 24, wherein ~~A~~ Ar represents a heteroaromatic system.

26. (Currently Amended) A composite according to claim 24 wherein

X is a functional group selected from the group consisting of -SH; -SiHCl₂; -SiH₂Cl; -Si(Cl)₃; -SiHBr₂; -SiH₂Br; -SiBr₃; -Si(R'(Cl)₂); -Si(OR')₃; -Si(R'(OR')₂); -COOH; -COCl; -PO₃H₂; -SO₂H; an organometallic group of the formula -M(OR')_n, whereby M is a metal selected from the group consisting of Al, Sn, B, Ti and V and n is the ligand number corresponding to the metal M; a phthalocyanin; a phthalonitril group; a monothiol; ~~or~~ and a monothiolate group; R' being an alkyl;

~~R' is an alkyl~~

Y is a functional group selected from the group consisting of NH₂; NHR'; NR'₂; an unsaturated residue; an acrylic acid group; a methacrylic acid group; methyl esters or ethyl esters; and

~~CN is a functional group selected from the group consisting of an activated carboxylic ester; an aldehyde group; an epoxide group; SH; SiHCl₂; SiH₂Cl; Si(Cl)₃; SiHBr₂; SiH₂Br; SiBr₃; Si(R'(Cl)₂); Si(OR')₃; Si(R'(OR')₂); COOH; COCl; or a functional group capable of forming a complex with at least one ingredient of a non-metallic medium;~~

R represents -CH₂-; and

~~AR represents an aromatic system.~~

27. (Currently Amended) A composite according to claim 26, wherein ~~AR~~ Ar represents a heteroaromatic system.

28. (Currently Amended) A composite according to claim 26, wherein R represents a $-(CH_2)_n-$ chain; $2 \leq n \leq 20$; and said chain ~~may be~~ is unhalogenated, ~~may contain~~ contains aromatic units, and ~~may comprise~~ includes constituents selected from the group consisting of: $-(CH_2)_iCH_3$ where $0 \leq i \leq 5$, $-O(CH_2)_jCH_3$, or $-O(CF_2)_iCH_3$ where $0 \leq j \leq 4$, $-CN$ and $-NH_2$; $-CF_2-$; $-CH_2-CO-NH-CH_2-$; $-CF_2-CO-NH-CF_2-$; $-CH_2-CO-NH-CF_2-$; and $CF_2-CO-NH-CH_2-$; and where ~~where $0 \leq n$ and $m \leq 16$.~~

$-CN$ is a functional group selected from the group consisting of an activated carboxylic ester; an aldehyde group; an epoxide group; $-SH$; $-SiHCl_2$; $-SiH_2Cl$; $-Si(Cl)_3$; $-SiHBr_2$; $-SiH_2Br$; $-SiBr_3$; $-Si(R'(Cl)_2)$; $-Si(OR')_3$; $-Si(R'(OR'))_2$; $-COOH$; $-COCl$; or a functional group capable of forming a complex with at least one ingredient of a non-metallic medium.

29. (Original) A composite according to claim 28, wherein said chain may be partially halogenated.

30. (Original) A composite according to claim 28, wherein said chain may be perhalogenated.

31. (Original) A composite according to claim 28, wherein said chain may contain thiophen units.

32. (Original) A composite according to claim 28, wherein said aromatic units may comprise constituents selected from the group consisting of: $-(CH_2)_iCH_3$ where $0 \leq i \leq 5$, $-O(CH_2)_jCH_3$, or $-O(CF_2)_iCH_3$ where $0 \leq j \leq 4$, $-CN$ and $-NH_2$; $-CF_2-$; $-CH_2-CO-NH-CH_2-$; $-CF_2-CO-NH-CF_2-$; $-CH_2-CO-NH-CF_2-$; and $CF_2-CO-NH-CH_2-$ ~~where $0 \leq n$ and $m \leq 16$.~~

33. (Original) A composite according to claim 31, wherein said thiophen units ~~may~~ comprise constituents selected from the group consisting of: $-(CH_2)_iCH_3$ where $0 \leq i \leq 5$, $-O(CH_2)_jCH_3$, ~~or~~ $-O(CF_2)_iCH_3$ where $0 \leq j \leq 4$, $-CN$, ~~and~~ $-NH_2$; $-CF_2-$; $-CH_2-CO-NH-CH_2-$; $-CF_2-CO-NH-CF_2-$; $-CH_2-CO-NH-CF_2-$; and $CF_2-CO-NH-CH_2-$ ~~where~~ $0 \leq n$ and $m \leq 16$.

34. (Currently Amended) A composite according to claim 26, wherein X is a functional group selected from the group consisting of the acid anhydride group of $-SH$; $-SiHCl_2$; $-SiH_2Cl$; $-Si(Cl)_3$; $-SiHBr_2$; $-SiH_2Br$; $-SiBr_3$; $-Si(R'(Cl)_2)$; $-Si(OR')_3$; $-Si(R'(OR')_2)$; $-COOH$; $-COCl$; $-PO_3H_2$, ~~or~~ and $-SO_2H$.

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35. (Currently Amended) A composite according to claim 26, wherein X is a functional group selected from the group consisting of the acid chloride group of $-SH$; $-SiHCl_2$; $-SiH_2Cl$; $-Si(Cl)_3$; $-SiHBr_2$; $-SiH_2Br$; $-SiBr_3$; $-Si(R'(Cl)_2)$; $-Si(OR')_3$; $-Si(R'(OR')_2)$; $-COOH$; $-COCl$; $-PO_3H_2$, ~~or~~ and $-SO_2H$.

36. (Currently Amended) A composite according to claim 26, wherein R' is an alkyl selected from the group consisting of methyl, ethyl ~~or~~ and propyl.

37. (Canceled)

38. (Currently Amended) A cured ~~rubber or rubber-like~~ composition obtained by vulcanization of a composite according to claim 1.

39. (Original) A composition according to claim 38, wherein said composition is a pneumatic tire.

40. (Original) A composition according to claim 38, wherein said composition is a hose.

41. (Original) A composition according to claim 38, wherein said composition is a conveyor belt.

42. (Original) A composition according to claim 38, wherein said composition is a pulley belt.